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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CORRIELUS, JEAN B	
ART UNIT	**PAPER NUMBER**
2611	

MAIL DATE	DELIVERY MODE
05/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,484	MCCRADY, DENNIS D.	
	Examiner	Art Unit	
	Jean B. Corrielus	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

2. The Declaration filed on 5/2/07 under 37 CFR 1.131 is sufficient to overcome the Burchfiel reference. However, the declaration stated that the invention was in public use more than a year prior filing of the Non-provisional application. Therefore, a rejection base on such admission and anew ground of rejection based on newly found reference to Franceschini et at US Patent Publication No. 20020136276 follow.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-33 are rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention. In the declaration filed on 5/2/07, applicant's admitted that was in **public use** prior to 10/24/02, which is more than a year prior to the filing of the Non-provisional application (10/29/03).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-11, 16-26 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Franceschini et at US Patent Publication No. 20020136276 in view of Awater US Patent No. 6,175,551.

As per claim 1, Franceschini discloses a system and method for generating a signal for transmission in non-contiguous frequency bands that are separated by at least one segment of frequency spectrum excluded from use in transmitting the signal, see fig. 1A and paragraph 0029 comprising: inherently a processor for generating that generates a digital time-domain signal see input to device 10; a modulator 10 " non-contiguous spectrum selector" that converts the digital time-domain signal to a frequency-domain signal see paragraphs 0027 and 0036 that includes the non-contiguous frequency bands see fig. 1a and the at least one segment of frequency spectrum, excises a portion of the frequency-domain signal corresponding to the at least one segment of frequency spectrum see fig. 1A, paragraphs 0025, 0023 and 0036, and converts the excised frequency-domain signal to an excised time-domain signal that includes signal components in the non-contiguous frequency bands see paragraphs 0027 and 0040. However, Franceschini et al fails to teach a digital-to-analog converter that converts the excised time-domain signal to an analog signal for transmission channel. However, as

evidence by Awater, it is well known to use a digital-to-analog converter converts time domain signal to an analog signal prior to transmission, see for instance fig. 4 element 36. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Franceschini so as to allow the transmitter to convert the digital signal into an analog equivalent so as to allow transmission over analog channels where digital channels such as T1 are not available.

As per claim 2, Franceschini et al further teaches the device 10 "non-contiguous spectrum selector) comprises: a FFT module (discrete Fourier transform module) that converts the digital time-domain signal to the frequency-domain signal, wherein the frequency-domain signal comprises a plurality of frequency-domain samples corresponding to respective frequency bins; an inherent excision module that selectively removes frequency bins to cause spectral nulling at the at least one segment of frequency spectrum excluded from signal transmission; and an IFFT (inverse discrete Fourier transform module) that converts the excised frequency-domain signal to the excised time-domain signal see paragraphs 0025, 0027, 0029, 0036 and fig. 1A.

As per claim 3, see claim 2.

As per claim 4, Franceschini et al teach shaping of the frequency response of each bins see paragraph 0036, line 8.

As per claim 5, the signal is inherently a baseband signal. See fig. 1.

As per claim 6, Franceschini teaches an exciter 20 considered as the claimed "digital mixer" for upconverting the digital signal into an IF signal see 0021. Note that it

is well know to provide a D/A converter with an digital signal for conversion to analog. And the reason would have been the same as provided above with respect to claim 1.

As per claim 7, note that is well known in the art to filter a signal prior to transmission to remove spurious or noise component from the signal.

As per claim 8, the signal is a spread spectrum signal see paragraph 0023.

As per claim 9 because the signal is a spread spectrum signal, is has to include a sequence of sample chips.

As per claim 10, the signal includes data for transmission to a communication device.

As per claim 11, it is well known in the art to transmit a range waveform from a transmitter to a receiver to determine the range between the receiver and transmitter. Given that, it would have been obvious to one skill in the art to incorporate such a teaching in Franceschini et al and Awater in order determine other signal parameter such as transmission power so as to enhance signal transmission between the transmitter and receiver.

As per claim 16, the system includes a transmitter 110 and a receiver 100 (modem).

As per claim 17, the system includes a communication device that includes the processor, the modulator (non-contiguous band selector" and the D/A see fig. 1.

As per claim 18 the device is a mobile device. See paragraph 0004.

As per claim 19, the system includes a plurality of devices in a network. See paragraph 0003.

As per claim 20, see claim 1.

As per claim 21, see claim 2.

As per claim 22, see claim 5.

As per claim 23, see claim 6.

As per claim 24, see claims 8 and 9.

As per claim 25, see claim 10.

As per claim 26, see claim 11.

As per claim 29, as shown in fig. 1A, Franceschini teaches that the excise portion of the frequency spectrum is independent of a signal level of the frequency domain or time domain signal.

As per claim 30 Franceschini teaches that a bandwidth of the frequency domain signal generated by the selector (fig. 1A and paragraph 0032) inherently corresponds to an overall band that extends from a lowest frequency of a lowest frequency band to a highest frequency to the highest frequency band of the bands.

As per claim 31, see claim 29.

As per claim 32 see claim 30.

7. Claims 12-15, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Franceschini et at US Patent Publication No. 20020136276 in view of Awater US Patent No. 6,175,551.and further in view of Wade US patent No. 5,263,048.

As per claim 12, at paragraph 0022 Franceschini teaches that frequency excision is performed as well in the receiver see paragraph 0022 therefore it has to include a receiver spectrum selector that converts the received digital time-domain signal to a

received frequency-domain signal, excises a portion of the received frequency-domain signal corresponding to the at least one segment of frequency spectrum, and converts the excised received frequency-domain signal to an excised, received time-domain signal. However, Franceschini and Awater fail to teach substantially an analog-to-digital converter that converts a received signal to a received digital time-domain signal. Wade teaches a receiver fig. 3 comprising an analog-to-digital converter 12 that converts a received signal to a received digital time-domain signal; and circuit 10 (receiver spectrum selector) that converts the received digital time-domain signal to a received frequency-domain signal see output of the processor 20, excises a portion of the received frequency-domain signal corresponding to the at least one segment of frequency spectrum see output of circuit 22, and converts the excised received frequency-domain signal to an excised, received time-domain signal see output of processor 24. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Franceschini and Awater in order to provide proper means (such as digital circuitry) to received and process the transmitted signal so as to recover the original signal.

As per claim 13, it is well know in the art to include a time of arrival processor in a receiver. Given that it would have been obvious to one skill in the art to include such a device in Franceschini and Awater in order to determine other signal parameter such as signal velocity so as to enhance signal transmission between the transmitter and receiver.

As per claim 14, it is well known in the art to incorporate an acquisition processor in a receiver for signal acquisition. Given that, it would have been obvious to one skill in the art to incorporate such a processor in Franceschini and Awater and Wade in order to enhance reconstruction of the original signal.

As per claim 15 Wade teaches the circuit perform interference excision see fig. 3. Given that fact, it would have been obvious to one skill in the art to configure Franceschini and Awater in such a way as to remove interference in order to enhance signal detection.

As per claim 27, see claim 12.

As per claim 28, see claim 13.

8. Claims 1-11, 16-26 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laroia et al US Patent Application Publication No. No. US 2002/0172213 in view of Panasik US patent No. 6,668,008.

As per claim 1, Laroia et al discloses a method and apparatus figs. 1, 3B and 4B comprising a processor (14, 18 and 19) that generates a digital time-domain signal see fig. 1, lines 3-6 (note that the data processor generates digital data); circuit arrangement 20 and Fig. 4B considered as the claimed " non-contiguous spectrum selector" that converts the digital time-domain signal to a frequency-domain signal see circuit 52, zeroes (excises) a portion of the frequency-domain signal see Fig. 3B and paragraph 0053, and converts the zeroed (excised) frequency-domain signal to an excised time-domain signal see output of transformer "IDFT 52" of fig. 4B it further teaches a D/A 28

to convert digital signal into an analog form prior to transmission over the channel (antenna 34). However, Laroia does not explicitly teach that the frequency bands are non-contiguous and are separated by a segment of the frequency spectrum not use to transmit signal. Panasik teaches transmission in non-contiguous frequency separated by a segment of the frequency spectrum not use to transmit signal and excised at least a portion of the frequency spectrum in frequency domain see fig. 1. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Laroia in order to conserve power energy and to expand battery life since a clean signal would draw less power than a signal that includes interference.

As per claim 2, Laroia further teaches that circuit (the non-contiguous spectrum selector) fig. 4B comprises: a DFT 52 that converts the digital time-domain signal to the frequency-domain signal, wherein the frequency-domain signal comprises a plurality of frequency-domain samplés corresponding to respective frequency bins; a zero insertion circuit 56 (excision module) that selectively causes spectral nulling in the a plurality of frequency bins; and an IDFT circuit 58

As per claim 3, see claim 2.

As per claim 4, Laroia teaches a windowing device fig. 8B to shape the frequency response of the frequency bins.

As per claim 5, the digital time signal is inherently a baseband signal as the signal is generated at the baseband level (see fig. 1).

As per claim 10, Laroia that the transmitter fig.1 transmit data to a remote communication device.

As per claim 17, the system comprises a communication device that includes the processor, the non-contiguous spectrum selector and the digital-to-analog converter see fig. 1.

As per claim 18, the communication device is inherently a mobile communication device see fig. 1.

As per claim 19, Laroia teaches the system includes a plurality of communication devices communicating in a network see paragraphs 006 and 0040.

As per claim 20, see claim 1.

As per claim 21, see claim 2.

As per claim 22, see claim 5.

As per claim 25, see claim 10.

As per claim 29, as shown in fig. 3B, Laroia teaches that the excise portion of the frequency spectrum is independent of a signal level of the frequency domain or time domain signal.

As per claim 30 Laroia teaches that a bandwidth of the frequency domain signal generated by the selector (fig. 3B) inherently corresponds to an overall band that extends from a lowest frequency of a lowest frequency band to a highest frequency to the highest frequency band of the bands.

As per claim 31, see claim 29.

As per claim 32 see claim 30.

As per claim 6, as applied to claim 1 above, Laroia and Panasik teach every feature of the claimed invention but do not explicitly teach a digital mixer to convert the

digital signal into an intermediate signal prior to digital to analog conversion. However, it is well known in the art to include a digital mixer in transmit chain to upconvert a digital signal into an IF signal. Given that, it would have been obvious to one skill in the art to incorporate a digital mixer in Laroia and Panasik in order to convert the baseband signal into a format suitable for transmission.

As per claim 7, Laroia further teaches a filter 30 coupled to the D/A converter 28.

As per claim 8, Laroia and Panasik do not explicitly teach that the signal is spread spectrum signal. However, it would have been obvious to one skill in the art to format the signal as a spread spectrum signal in order prevent the signal from being intercepted by unauthorized user.

As per claim 9, note that it is inherent for spread spectrum signal to include plurality of samples chips.

As per claim 11, it is well known in the art to transmit a range waveform from a transmitter to a receiver to determine the range between the receiver and transmitter. Given that, it would have been obvious to one skill in the art to incorporate such a teaching in Laroia and Panasik in order determine other signal parameter such as transmission power so as to enhance signal transmission between the transmitter and receiver.

As per claim 16, Laroia teaches that the transmitter fig. 1 includes the spectrum selector and Laroia and Panasik however fail to teach that the circuit can include a receiver. However, it would have been obvious to one skill in the art to include a

transmitter in Laroia and Panasik in order to be above to process incoming signals from a remote transmitter.

As per claim 23, see claim 6.

As per claim 24, see claim 9.

As per claim 26, see claim 11.

9. Claims 12-15, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laroia et al US Patent Application Publication No. No. US 2002/0172213 in view of Panasik US patent No. 6,668,008 and further in view of Wade US patent No. 5,263,048.

As per claim 12, as applied to claim 1 above, Laroia and Panasik teach Substantially every feature of the claimed invention and do not explicitly teach an analog-to-digital converter that converts a received signal to a received digital time-domain signal; and a receiver spectrum selector that converts the received digital time-domain signal to a received frequency-domain signal, excises a portion of the received frequency-domain signal corresponding to the at least one segment of frequency spectrum, and converts the excised received frequency-domain signal to an excised, received time-domain signal. Wade teaches a receiver fig. 3 comprising an analog-to-digital converter 12 that converts a received signal to a received digital time-domain signal; and circuit 10 (receiver spectrum selector) that converts the received digital time-domain signal to a received frequency-domain signal see output of the processor 20, excises a portion of the received frequency-domain signal corresponding to the at least one segment of frequency spectrum see output of circuit 22, and converts the

excised received frequency-domain signal to an excised, received time-domain signal see output of processor 24. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Laroia and Panasik in order to provide proper means to received and process the transmitted signal so as to recover the original signal.

As per claim 13, it is well know in the art to include a time of arrival processor in a receiver. Given that it would have been obvious to one skill in the art to include such a device in Laroia Panasik and Wade in order to determine other signal parameter such as signal velocity so as to enhance signal transmission between the transmitter and receiver.

As per claim 14, it is well known in the art to incorporate an acquisition processor in a receiver for signal acquisition. Given that, it would have been obvious to one skill in the art to incorporate such a processor in Laroia Panasik and Wade in order to enhance reconstruction of the original signal.

As per claim 15 Wade teaches the circuit perform interference excision see fig. 3. Given that fact, it would have been obvious to one skill in the art to configure Laroia and Panasik in such a way as to remove interference in order to enhance signal detection.

As per claim 27, see claim 12.

As per claim 28, see claim 13.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jean B Corrielus
Primary Examiner
Art Unit 2611

5-15-07